



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/805,176 | 03/19/2004 | Reid H. Bowman | 27566-6 | 7417 |
| 21130 | 7590 | 12/14/2005 | EXAMINER | |
| BENESCH, FRIEDLANDER, COPLAN & ARONOFF LLP ATTN: IP DEPARTMENT DOCKET CLERK 2300 BP TOWER 200 PUBLIC SQUARE CLEVELAND, OH 44114 | | | KRECK, JOHN J | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3673 | |
| DATE MAILED: 12/14/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|------------------------------|------------------------|---------------------|
| | 10/805,176 | BOWMAN ET AL. |
| Examiner | Art Unit | |
| John Kreck | 3673 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on ____.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-24 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-24 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .

5) Notice of Informal Patent Application (PTO-152)

6) Other: ____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 7, 8, 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilson (U.S. Patent number 5,525,008).

Wilson teaches the process including the injecting a first oxidant (peroxide—col. 9, line 17) in to the aquifer; and injecting a compressed gas (col. 9, lines 30-37---see also figure 4) as called for in claim 1.

Wilson teaches the forcing (see figure 4 “mechanical circulation” and “dispersion effect”) as called for in claim 2.

Wilson teaches the peroxide as called for in claim 7.

Wilson teaches the second oxidant as called for in claim 8.

Wilson teaches the peroxide concentration as called for in claim 10.

With regards to claim 11: Wilson discloses H₂O₂ and O₃: these react to form hydroxyl radicals.

Wilson teaches the second oxidant as called for in claim 12.

Wilson teaches the injection as called for in claim 13.

Wilson teaches at least the air or nitrogen as called for in claim 14.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3-6, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson.

Wilson fails to explicitly disclose the "saturated" or "smear" zones; however, since Wilson teaches the process is used in and above the groundwater zone, one of ordinary skill in the art would have found it obvious to have used the process in the saturated or smear zones as called for in claims 3 and 4.

Wilson teaches the forcing groundwater as called for in claim 5.

With regards to claim 6; Wilson teaches the discontinuing (see col. 9, lines 39-45); the returning would inherently result from discontinuing.

With regards to claim 15: Wilson teaches at least stopping and restarting the injection (e.g. col. 9, line37+); this suggests to one of ordinary skill in the art the step of periodically cycling the injection step.

4. Claims 9, 16- are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson in view of Briggs, et al. (U.S. Patent number 6,352,387).

Regarding claim 9: Wilson teaches ozone, but lacks the ozone/oxygen mixture.

Note that Wilson teaches that the gas is chosen based (in part) on convenience and/or cost.

Briggs teaches (col. 5, line 65) that such a mixture is effective in a similar process.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used a mixture of ozone and oxygen; based on material availability, for example.

Regarding independent claim 16:

Wilson teaches the injecting peroxide and compressed gas, which may be ozone, air or n2. Wilson lacks the ozone/oxygen mixture. Wilson lacks the separate injection of a compressed gas other than ozone. Wilson fails to explicitly disclose the "saturated" or "smear" zones; however, since Wilson teaches the process is used in and above the groundwater zone, one of ordinary skill in the art would have found it obvious to have used the process in the saturated or smear zones

Briggs teaches the ozone/oxygen mix.

One of ordinary skill in the art would have found it obvious to have performed separate injection of an oxidizing gas (i.e. ozone) and non-oxidizing gas (n2); since the oxidizing gas is more expensive than non-oxidizing; and once the desired amount of oxidizing gas is in the ground, it is not necessary to provide more. The suggestion to

make such a modification is found within the level of knowledge available to those of ordinary skill in the art.

One of ordinary skill in the art would have found it further obvious to have used an ozone/oxygen mixture; based on material availability, for example.

Wilson teaches the desorbed contaminants as called for in claim 17.

With regards to claim 18; Wilson teaches the stopping of injection (see col. 9, lines 39-45); the allowing the water to return would inherently result from stopping.

With regards to claim 19: Wilson teaches at least stopping and restarting the injection (e.g. col. 9, line37+): this suggests to one of ordinary skill in the art the step of periodically cycling the injection step.

With regards to claim 20: the Wilson process allows for such injection (note that the claim fails to positively recite any process step).

Wilson teaches the injection from multiple points as called for in claims 21 and 22.

Regarding independent claim 23:

Wilson teaches the intermittently introducing first oxidant (peroxide) and gas (which may be an oxidant). Wilson lacks the second oxidant other than the gas.

One of ordinary skill in the art would have found it obvious to have performed separate injection of an oxidizing gas (i.e. ozone) and non-oxidizing gas (n2); since the oxidizing gas is more expensive than non-oxidizing; and once the desired amount of

oxidizing gas is in the ground, it is not necessary to provide more. The suggestion to make such a modification is found within the level of knowledge available to those of ordinary skill in the art.

With regards to claim 24: the Wilson process allows for such injection (note that the claim fails to positively recite any process step).

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Husten (U.S. Patent number 5,449,249); Kawabata, et al. (U.S. Patent number 5,803,664); and Raymond (U.S. Patent number 3,846,290) teach similar processes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is 571-272-7042. The examiner can normally be reached on Mon, Tu, Th: 530-400; Fri: telework.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Shackelford can be reached on 571-272-7049. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John Kreck
Primary Examiner
Art Unit 3673

12 December 2005